What is claimed is:

1. A large scale system, comprising

a first processor, said first processor being an information collection system for obtaining current values of parameters representing an environment of said large scale system;

a second processor for determining actions to be taken in said environment in response to said current values collected by said first processor;

a knowledge machine for developing a first program for said first processor and a second program for said second processor, said first and second programs being such as to cause said first and second machine to monitor and control said environment.

2. The invention as defined in claim 1 wherein said first program causes said first machine to collect information as a function of the application for which said large scale system is being employed.

3. The invention as defined in claim 1 wherein said first program causes said first machine to collect information as a function of the actions being taken by said second processor.

4. The invention as defined in claim 1 wherein said first program causes said first machine to determine what are the parameters for which values need to be collected.

5. The invention as defined in claim 1 wherein said first program causes said first machine to determine what are the parameters for which values need to be collected, said first program using an initial list of parameters supplied by said knowledge machine and further developing a list of at least one additional parameters.

6. The invention as defined in claim 1 wherein said first machine is a network switch.

7. The invention as defined in claim 1 wherein said knowledge machine further comprises a knowledge base and a knowledge processor.

8. The invention as defined in claim 7 wherein said knowledge base consists of at least one element from the set consisting of: a parameter optimization unit, stored sensor information, an expert system, and a predictive modeling engine.

9. The invention as defined in claim 1 wherein said first and second processors are coupled together to coordinate their initiation of execution of said first and second programs.

10. A method for use in operating a large scale system using a monitoring and control arrangement in which a first processor senses the operating condition of said large scale system, a second processor determines actions to be taken in said system, said first and second processors being coupled to a knowledge machine, the method comprising the steps of:

developing in said knowledge machine a first program for said first processor and a second program for said second processor, said first and second programs being such as to cause said first and second machine to monitor and control said environment when executed by said first and second machines, respectively;

transmitting, by said knowledge machine, of said first program to said first machine;

transmitting, by said knowledge machine, of said second program to said second machine; and

coordinating initial execution of said first program by said first machine and initial execution of said second program by said second machine to be substantially simultaneous.

11. The invention as defined in claim 10 wherein said knowledge machine develops said first and second programs when a projection of system instability by said knowledge machine is confirmed.

12. The invention as defined in claim 11 further comprising the steps of:

predicting, by said knowledge processor, based on a critical subset of sensor information that said large scale system is not stable; and

confirming said prediction that said large scale system is not stable using additional information beyond said critical subset.

13. The invention as defined in claim 11 further comprising the step of:

determining at least one reason for said system instability.

14. The invention as defined in claim 11 wherein said first and second programs are developed to address and correct said at least one reason for said system instability.

15. The invention as defined in claim 10 wherein said first program includes an indication of a sensing protocol.

16. The invention as defined in claim 10 wherein said second program includes an indication of controls in said large scale system to undergo a state change.

17. The invention as defined in claim 10 further comprising the steps of:

determining that human intervention is required; and

initiating a human perceivable alert.

18. Apparatus for use in operating a large scale system using a monitoring and control arrangement in which a first processor senses the operating condition of said large scale system, a second processor determines actions to be taken in said system, said first and second processors being coupled to a knowledge machine, the apparatus comprising:

means for developing in said knowledge machine a first program for said first processor and a second program for said second processor, said first and second programs being such as to cause said first and second machine to monitor and control said environment when executed by said first and second machines, respectively;

means for transmitting, by said knowledge machine, of said first program to said first machine;

means for transmitting, by said knowledge machine, of said second program to said second machine; and

means for coordinating initial execution of said first program by said first machine and initial execution of said second program by said second machine to be substantially simultaneous.